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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/697,455
Filing Date: October 30, 2003
Appellant(s): YAMAMOTO ET AL.

John P. Scherlacher
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/7/07 appealing from the Office action mailed 3/22/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US PgPub 20020060964	Park	5-2002
US 6434096	Akagi et al.	8-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Park (U.S. PgPub 2002/0060964 A1) in view of Akagi et al (hereafter Akagi)(U.S. 6,434,096).

Regarding claim 1, Park discloses a tilt control method in an optical pickup including a tilt adjustment coil for adjusting the tilt of an objective lens, comprising the steps of (see **Figure 1, Elements 20 and 52**): playing back an RF signal of an offset adjustment signal that was recorded on the optical disc (see **Paragraph 25**) detecting the peak level in the RF signal of said offset adjustment signal that was played back (see **Paragraph 25, Claim 7, and Figure 1, element 43a**); setting a driving signal level, when the detected peak level reaches a maximum, as an offset value for the driving signal to be supplied to the tilt adjustment coil (see **Paragraphs 25 and 56**). Park does not specifically disclose recording an offset adjustment signal in a test recording area provided on an optical disc, wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil. In the same field of endeavor, Akagi discloses recording an offset adjustment signal in a test recording area provided on an optical disc, wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to a tilt adjustment coil (see **Column 12, lines 40-45 and Claim 33**) and wherein the tilt angle of the optical pickup is changed by changing the level of a drive current supplied to the tilt adjustment coil (see **Column 4, line 45-Column 5, line 13 and Figure 45**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Park's above teachings with Akagi's above teachings. Both Park and Akagi disclose methods for optical tilt control, via said offset signals. It would have been advantageous to one of ordinary skill in the art at the time the invention was made to store the offset signal on the optical disc, as taught by Akagi, because in doing so, complications such as memory loss and lack of memory space can be avoided, which would result in an inability to perform tilt control. Furthermore, by not erasing the offset signals on the discs, tilt control for a plurality of discs can be continuously achieved without the need for recording the offset signal upon insertion of the discs. Thus, this reduces the time needed for tilt control setup.

Regarding claim 2, Park discloses wherein, the tilt control is performed by adding the set offset value to a tilt signal for performing tilt control and supplying the added signal to said tilt adjustment coil (**see Paragraph 54 and Figure 1, Elements 43a, 43b and 43d**).

Regarding claim 3, Park discloses a tilt control method in an optical pickup including a tilt adjustment coil for adjusting the tilt of an objective lens, comprising the steps of (**see Figure 1, Elements 20 and 52**): playing back an RF signal of an offset adjustment signal that was recorded on the optical disc (**see Paragraph 25**); detecting a bottom level in the RF signal of said offset adjustment signal that was played back (**see Figure 5, Element 13 and Figure 8A**); and setting said driving signal level, when the detected bottom level reaches a minimum, as an offset value for the driving signal to be supplied to the tilt adjustment coil (**see Paragraphs 25 and 56. More specifically,**

bottom level detection is done in the same manner as that for detecting the peak level). Park does not specifically disclose recording an offset adjustment signal in a test recording area provided on an optical disc, wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil. In the same field of endeavor, Akagi discloses recording an offset adjustment signal in a test recording area provided on an optical disc, wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to a tilt adjustment coil (**see Column 12, lines 40-45 and Claim 33**) and wherein the tilt angle of the optical pickup is changed by changing the level of a drive current supplied to the tilt adjustment coil (**see Column 4, line 45-Column 5, line 13 and Figure 45**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Park's above teachings with Akagi's above teachings. Both Park and Akagi disclose methods for optical tilt control, via said offset signals. It would have been advantageous to one of ordinary skill in the art at the time the invention was made to store the offset signal on the optical disc, as taught by Akagi, because in doing so, complications such as memory loss and lack of memory space can be avoided, which would result in an inability to perform tilt control. Furthermore, by not erasing the offset signals on the discs, tilt control for a plurality of discs can be continuously achieved without the need for recording the offset signal upon insertion of the discs. Thus, this reduces the time needed for tilt control setup.

Regarding claim 4, Park discloses wherein, the tilt control is performed by adding the set offset value to a tilt signal for performing tilt control and supplying the added signal to said tilt adjustment coil (**see Paragraph 54 and Figure 1, Elements 43a, 43b and 43d**).

Regarding claim 5, Park discloses a tilt control method in an optical pickup including a tilt adjustment coil for adjusting the tilt of an objective lens, comprising the steps of (**see Figure 1, Elements 20 and 52**): playing back an RF signal of an offset adjustment signal that was recorded on the optical disc (**see Paragraph 25**); detecting the peak level and the bottom level in the RF signal of said offset adjustment signal that was played back (**see Paragraph 25, Claim 7, Figure 1, element 43a, Figure 5, Element 13 and Figure 8A**); and setting said driving signal level, when the difference between the detected peak level and bottom level reaches a maximum, as an offset value for the driving signal to be supplied to the tilt adjustment coil (**see Paragraph 34**). Park does not specifically disclose recording an offset adjustment signal in a test recording area provided on an optical disc, wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil. In the same field of endeavor, Akagi discloses recording an offset adjustment signal in a test recording area provided on an optical disc, wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to a tilt adjustment coil (**see Column 12, lines 40-45 and Claim 33**) and wherein the tilt angle of the optical pickup is changed by changing the level of a

drive current supplied to the tilt adjustment coil (**see Column 4, line 45-Column 5, line 13 and Figure 45**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Park's above teachings with Akagi's above teachings. Both Park and Akagi disclose methods for optical tilt control, via said offset signals. It would have been advantageous to one of ordinary skill in the art at the time the invention was made to store the offset signal on the optical disc, as taught by Akagi, because in doing so, complications such as memory loss and lack of memory space can be avoided, which would result in an inability to perform tilt control. Furthermore, by not erasing the offset signals on the discs, tilt control for a plurality of discs can be continuously achieved without the need for recording the offset signal upon insertion of the discs. Thus, this reduces the time needed for tilt control setup.

Regarding claim 6, Park discloses wherein, the tilt control is performed by adding the set offset value to a tilt signal for performing tilt control and supplying the added signal to said tilt adjustment coil (**see Paragraph 54 and Figure 1, Elements 43a, 43b and 43d**).

Regarding claim 7, Park discloses a tilt control apparatus for adjusting the tilt of an objective lens in an optical pickup comprising (**see Figure 1, Elements 20 and 52**): a signal recording circuit for recording a signal by irradiating light onto a disc via said objective lens (**see Figure 54 and Figure 1, Element 20**); a photo detector circuit for obtaining an RF signal by detecting reflected light from the disc via said objective lens (**see Paragraph 55**); a peak level detector circuit for detecting the peak level of the RF

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signal from said photo detector circuit (**see Figure 1, Element 43a**); a tilt adjustment coil for controlling the tilt of said objective lens (**see Figure 1, Elements 20 and 52**); a tilt control circuit for controlling the driving signal level supplied to said tilt adjustment coil (**see Figure 1, Element 43d**); said photo detector circuit detects an RF signal of the offset adjustment signal that was recorded on the disc (**see Figure 1, Element 31**); the peak level detector circuit detects the peak level of the RF signal in said offset adjustment signal (**see Figure 1, Element 43a**); the tilt control circuit detects the driving signal level of the tilt control coil corresponding to the maximum of the detected peak level and uses the detected driving signal level as an offset value for tilt control (**see Paragraph 54 and Figure 1, Elements 43d and 52**). Park does not specifically disclose an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is stored and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil. In the same field of endeavor, Akagi discloses an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is stored (**see Column 12, lines 9-45**) and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil (**see Column 4, line 45-Column 5, line 13 and Figure 45**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the range of Park's above teachings with Akagi's above teaching. Both Park and Akagi et al. disclose apparatuses for optical tilt control, via said offset signals. It would have been advantageous to one of ordinary skill in the art at the time the invention was made to store the offset signal on the optical disc, as taught by Akagi, because in doing so, complications such as memory loss and lack of memory space can be avoided, which would result in an inability to perform tilt control. Furthermore, by not erasing the offset signals on the discs, tilt control for a plurality of discs can be continuously achieved without the need for recording the offset signal upon insertion of the discs. Thus, this reduces the time needed for tilt control setup. In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to discern the fact that Park's teaching of **Figure 1, Element 40** maintains the relationship between driving signal and recording position, because this relationship is characteristically needed to control the apparatus taught by Park.

Regarding claim 8, Park discloses wherein said tilt control circuit performs tilt control by adding said offset value to a tilt signal for performing tilt control and supplying this to said tilt adjustment coil (**see Paragraph 54 and Figure 1, Elements 43a, 43b and 43d**).

Regarding claim 9, Park discloses a tilt control apparatus for adjusting the tilt of an objective lens in an optical pickup comprising (**see Figure 1, Elements 20 and 52**): a signal recording circuit for recording a signal by irradiating light onto a disc via said objective lens (**see Figure 54 and Figure 1, Element 20**); a photo detector circuit for

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obtaining an RF signal by detecting reflected light from the disc via said objective lens (see Paragraph 55); a bottom level detector circuit for detecting the bottom level of the RF signal from said photo detector circuit (see Figure 5, Element 13 and Figure 8A); a tilt adjustment coil for controlling the tilt of said objective lens (see Figure 1, Elements 20 and 52); a tilt control circuit for controlling the driving signal level supplied to said tilt adjustment coil (see Figure 1, Element 43d); said photo detector circuit detects an RF signal of the offset adjustment signal that was recorded on the disc (see Figure 1, Element 31); the bottom level detector circuit detects the bottom level of the RF signal in said offset adjustment signal (see Paragraphs 25 and 56. Specifically, bottom level detection is done in the same manner as that for detecting the peak level); the tilt control circuit detects the driving signal level of the tilt control coil corresponding to the minimum of the detected bottom level and uses the detected driving signal level as an offset value for tilt control (see Paragraph 54, Figure 1, Elements 43d and 52, and Element 8A). Park does not specifically disclose an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is stored and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil. In the same field of endeavor, Akagi discloses an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is

stored (**see Column 12, lines 9-45**) and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil (**see Column 4, line 45-Column 5, line 13 and Figure 45**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the range of Park's above teachings with Akagi's above teaching. Both Park and Akagi et al. disclose apparatuses for optical tilt control, via said offset signals. It would have been advantageous to one of ordinary skill in the art at the time the invention was made to store the offset signal on the optical disc, as taught by Akagi, because in doing so, complications such as memory loss and lack of memory space can be avoided, which would result in an inability to perform tilt control. Furthermore, by not erasing the offset signals on the discs, tilt control for a plurality of discs can be continuously achieved without the need for recording the offset signal upon insertion of the discs. Thus, this reduces the time needed for tilt control setup. In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to discern the fact that Park's teaching of **Figure 1, Element 40** maintains the relationship between driving signal and recording position, because this relationship is characteristically needed to control the apparatus taught by Park.

Regarding claim 10, Park discloses wherein said tilt control circuit performs tilt control by adding said offset value to a tilt signal for performing tilt control and supplying this to said tilt adjustment coil (**see Paragraph 54 and Figure 1, Elements 43a, 43b and 43d**).

Regarding claim 11, Park discloses a tilt control apparatus for adjusting the tilt of an objective lens in an optical pickup comprising (**see Figure 1, Elements 20 and 52**): a signal recording circuit for recording a signal by irradiating light onto a disc via said objective lens (**see Figure 54 and Figure 1, Element 20**); a photo detector circuit for obtaining an RF signal by detecting reflected light from the disc via said objective lens (**see Paragraph 55**); a peak level detector circuit for detecting the peak level of the RF signal from said photo detector circuit (**see Figure 1, Element 43a**); a bottom level detector circuit for detecting the bottom level of the RF signal from said photo detector circuit (**see Figure 5, Element 13 and Figure 8A**); a tilt adjustment coil for controlling the tilt of said objective lens (**see Figure 1, Elements 20 and 52**); a tilt control circuit for controlling the driving signal level supplied to said tilt adjustment coil (**see Figure 1, Element 43d**); said photo detector circuit detects an RF signal of the offset adjustment signal that was recorded on the disc (**see Figure 1, Element 31**); the peak level detector circuit detects the peak level of the RF signal in said offset adjustment signal (**see Figure 1, Element 43a**); the bottom level detector circuit detects the bottom level of the RF signal in said offset adjustment signal (**see Paragraphs 25 and 56. Specifically, bottom level detection is done in the same manner as that for detecting the peak level**); and the tilt control circuit detects the driving signal level of the tilt control coil corresponding to the maximum of the difference between the detected peak level and bottom level and uses the detected driving signal level as an offset value for tilt control (**see Paragraphs 34 and 54, Figure 1, Elements 43d and 52**). Park does not specifically disclose an offset adjustment signal is written to the disc

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by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is stored and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil. In the same field of endeavor, Akagi discloses an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is stored (**see Column 12, lines 9-45**) and wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil (**see Column 4, line 45-Column 5, line 13 and Figure 45**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the range of Park's above teachings with Akagi's above teaching. Both Park and Akagi et al. disclose apparatuses for optical tilt control, via said offset signals. It would have been advantageous to one of ordinary skill in the art at the time the invention was made to store the offset signal on the optical disc, as taught by Akagi, because in doing so, complications such as memory loss and lack of memory space can be avoided, which would result in an inability to perform tilt control. Furthermore, by not erasing the offset signals on the discs, tilt control for a plurality of discs can be continuously achieved without the need for recording the offset signal upon insertion of the discs. Thus, this reduces the time needed for tilt control setup. In addition, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to discern the fact that Park's teaching of **Figure 1, Element 40** maintains the relationship between driving signal and recording position, because this relationship is characteristically needed to control the apparatus taught by Park.

Regarding claim 12, Park discloses wherein said tilt control circuit performs tilt control by adding said offset value to a tilt signal for performing tilt control and supplying this to said tilt adjustment coil (see **Paragraph 54 and Figure 1, Elements 43a, 43b and 43d**).

(10) Response to Argument

Regarding appellant's arguments beginning at the bottom of page 15 and continuing on page 16 of the Appeal Brief (which refer to independent claims 1, 3, and 5), the appellant argues that Akagi et al. (hereafter Akagi)(U.S. 6,434,096) does not disclose the limitations "recording an offset adjustment signal in a test recording area provided on an optical disc" and "wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil". Appellant's explanation of why Akagi does not disclose the cited features is recited as, "However, such sections of the reference in fact describe that an offset amount is stored beforehand. Nowhere does Akagi disclose or suggest the feature in accordance with the present invention". The Examiner respectfully disagrees. Column 12, lines 40-42 of Akagi recite, "The offset amount of the tilt error signal depending on the movement direction of the optical pickup **is stored** beforehand, the above mentioned store offset is read" (emphasis added). In this citation of Akagi, the offset signal is said to be stored in

a memory. It appears that the crux of Appellant's argument is that the memory referred to is not the optical disc itself, rather a separate memory circuit 319 as shown in figure 17. However, in Column 54, lines 6-12, Akagi clearly discloses that the offset signal is stored and reproduced on a specific part of an optical disc. In this portion of Akagi, the memory corresponds to the disc itself. Hence, it is evident that various forms of memory are used in the tilt control apparatus of Akagi to store the offset signal, including the optical disc itself. Thus, Akagi does disclose recording an offset adjustment signal to a test recording area provided on the disc.

Although the aforementioned storing place of the offset adjustment signal appears to be the applicant's main argument, the Examiner provides a further discussion of Akagi's disclosure of the remaining features of the limitations cited above. Namely, "wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil". Again, Column 12, lines 40-42 of Akagi recite, "The offset amount of the tilt error signal **depending on the movement direction of the optical pickup** is stored beforehand, the above mentioned store offset is read" (emphasis added). This portion of Akagi's disclosure suggests that the optical pickup is moving, which in turn, requires that a driving signal be supplied to the tilt adjustment coil to necessitate movement of the optical pickup. This directly corresponds to the limitation, "wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to the tilt adjustment coil". Thus, Akagi also discloses the remaining features of limitations cited above.

On page 16 of the Appeal Brief, the appellant argues, "Moreover, while lines 28 and 29 of Akagi describe an offset detection section for detecting the offset of the tilt area signal, such reference does not disclose or suggest how the offset is detected". In response to this argument, it is unclear which column of the Akagi reference the appellant is referring to and which limitation this argument is referring to. However, it is quite clear from appellant's argument that the offset detection section itself, which includes its internal components, is used to detect the offset.

On page 16 of the Appeal Brief, in reference to the claim 7 limitation which includes "an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil, and the relationship between driving signal level and recording position is stored", the appellant argues, "Again, Akagi teaches only that the **Office Action** of the tilt area signal is detected" (emphasis added). It is unclear what the appellant means by this last argument. However, the cited limitations of claim 7 are similar to those discussed in independent claims 1, 3, and 5 above. Column 12, lines 9-45 of Akagi fully disclose a tilt control apparatus which discloses the cited limitations of claim 7. Furthermore, Column 54, lines 6-12 further describe that the storing place of the offset signal is the disc itself. Thus, for reasons similar to those discussed in independent claims 1, 3, and 5 above, Akagi discloses the cited limitations of claim 7.

On page 17 of the Appeal Brief, in response to the arguments presented by the Examiner in the Advisory Action dated 6/12/07, the appellant argues, "However, Akagi does not show setting the driving signal level, when the detected peak level reaches a

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maximum, as an offset value of the driving signal to be supplied to the tilt adjustment coil. Furthermore, Akagi does shows detecting an amplitude of the tracking area signal but does not show detecting a peak level of an RF signal." The Examiner agrees with these arguments. However, it was **Park**, not Akagi, which was relied upon as disclosing these limitations in the Final Office Action dated 3/22/07 and in (9) Grounds of Rejection above. Thus, appellant's arguments are rendered moot.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Thomas Alunkal/

/Wayne Young/

Examiner AU 2627

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Conferees:

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